*Check List* **4**(3): 251–266, 2008.
ISSN: 1809-127X

**LISTS OF SPECIES**

# Magnoliophyta of the partial faunal reserve of Pama, Burkina Faso.

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**Abstract**: The partial faunal reserve of Pama is situated in the province of Kompienga, in the South-East of Burkina Faso, with typical Sudanian savanna vegetation. Adjacent to the Arli National Park and the Pendjari National Park, it is part of the so-called WAP complex, one of the largest wildlife areas in West Africa. Up to now, only little has been known about its flora. The present study aimed at reducing this gap in knowledge, and represents an important tool for conservation and research. The list of species was compiled from the surveys carried out from 2001 to 2004, additional relevé data, and herbarium specimens. We found 450 species, which belong to 244 genera and 73 families. The most species-rich family is Poaceae (83 species), followed by Fabaceae (64), Cyperaceae (24), Rubiaceae (22), Euphorbiaceae (20), Combretaceae (15), Asteraceae (14), Caesalpiniaceae (14), Mimosaceae (12), and Convolvulaceae (11).

## Introduction

For Burkina Faso only a few local floras have been published (e.g. Arbonnier et al. 2002; Guinko and Thiombiano 2005). For most reserves of the country, there are virtually no publications about the flora, although this knowledge is important for conservation and management. For the whole country, there are roughly 1,700 species known (Schmidt 2006; data from a national checklist, unpublished), for the Sudanian zone as a whole, ranging throughout West Africa, White (1986) estimated 2,750 species.

The partial faunal reserve of Pama is part of a complex of large nature reserves including the W National Park, the Arli National Park, and the Pendjari National Park (often referred to as WAP complex) in the countries Burkina Faso, Benin, and Niger. This complex is the largest remaining wildlife area in the Sudanian zone of West Africa, best known for its large mammals. With the increasing intensification of land use over the last decades, the reserves become even more important for the conservation of the flora as well.

## Materials and methods

The partial faunal reserve of Pama is a protected area of IUCN category IV, established by decree nr. 6090/SE/F in 1955. Organized hunting and ecotourism support the forestry service and the local population; other activities include the collection of medicinal plants and dead wood for firewood. Cattle grazing and traditional hunting are prohibited. The reserve covers an area of 223,500 ha and is situated between the national road N18 from Natiaboani to Porga to the west, the Pendjari River to the South, and the Singou River to the east (Figure 1). The floodplains of the Pendjari in the South of the reserve are the lowest areas in Burkina Faso. The leached ferruginous soils are of a texture ranging from muddy sand to clay (Laclavère 1998) and are occasionally disrupted by lateritic crusts and granite hills in the vicinity of Pama.

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The reserve represents typical elements of the North Sudanian Zone, usually shrub savannas with high perennial grasses, some low grass savannas on lateritic crusts (*bowé*), small rocky hills and denser riverine vegetation on the boards of the Pendjari and Singou rivers and smaller water courses. The online reports of Hartley et al. (2007) assign a high value of habitat irreplaceability of the reserve for Burkina Faso and for the Sudanian zone as a whole.

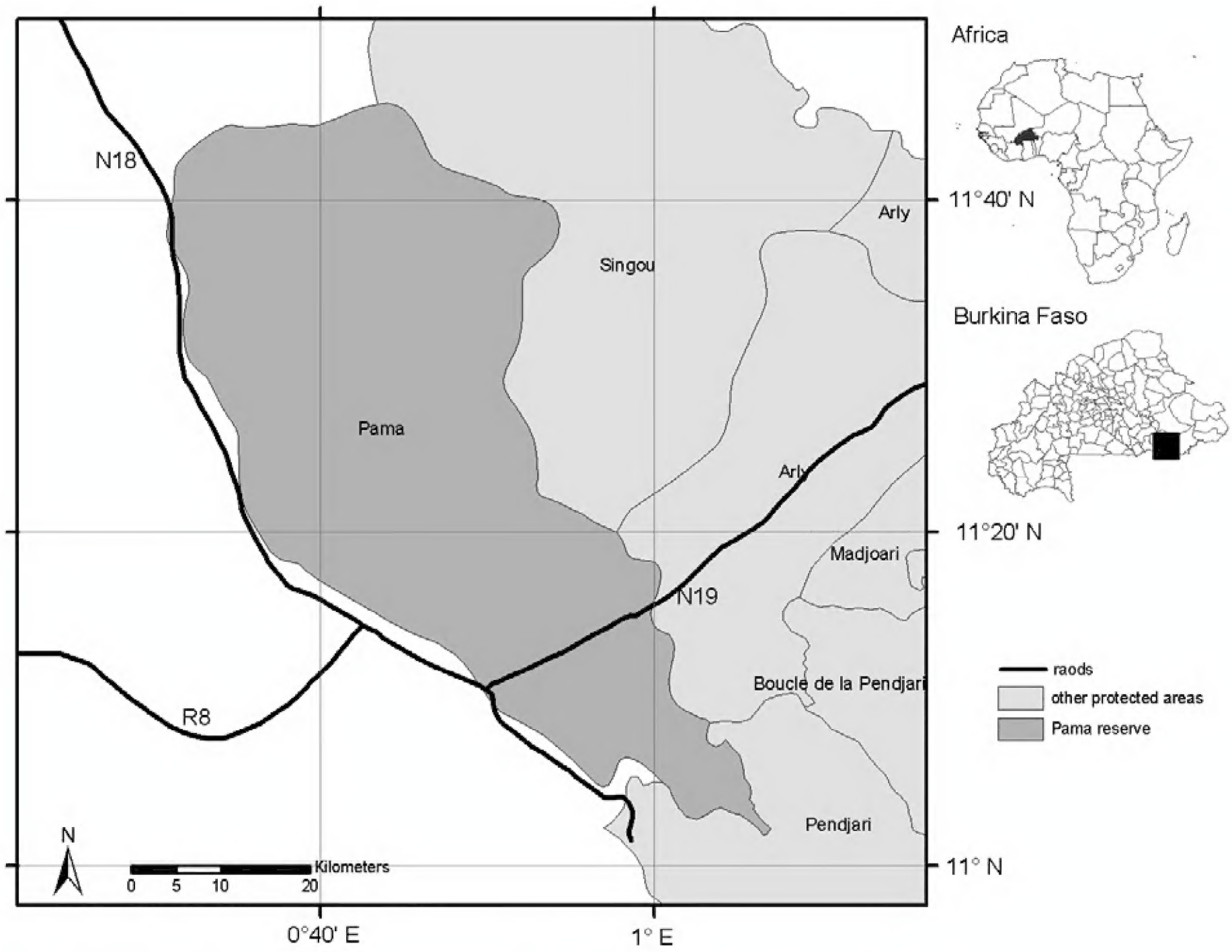


**Figure 1**. Map of the province of Kompienga showing the partial faunal reserve of Pama.

The list of species presented here was compiled from the surveys carried out by the first author from 2001 to 2004, data from the Natiabouani biodiversity observatory – a permanent plot of the BIOTA project in the North of the reserve (Hahn-Hadjali et al. 2006), a species inventory of herb layer plots conducted by Schmidt (2006) and specimen data from the University of Ouagadougou herbarium (OUA), and the Herbarium Senckenbergianum (FR). Species names followed the African Plants Database (Gautier et al. 2006), families were assigned according to Brummitt (1992), but alternative family names were adopted.

Information on the life form has been assembled from Guinko (1984), Aké Assi (2001; 2002), and supplemented by our own observations. The more detailed information found in the literature has been reduced to the main types, as defined by Raunkiaer (1905), in order to have a comparable definition of life forms.

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## Results and discussion

We found 450 species, which belong to 244 genera and 73 families. The most species rich families are Poaceae (83 species), followed by Fabaceae (64), Cyperaceae (24), Rubiaceae (22), Euphorbiaceae (20), Combretaceae (15), Asteraceae (14), Caesalpiniaceae (14), Mimosaceae (12), and Convolvulaceae (11) (Figure 2). These 10 families account for 62 % of all magnoliophytes.

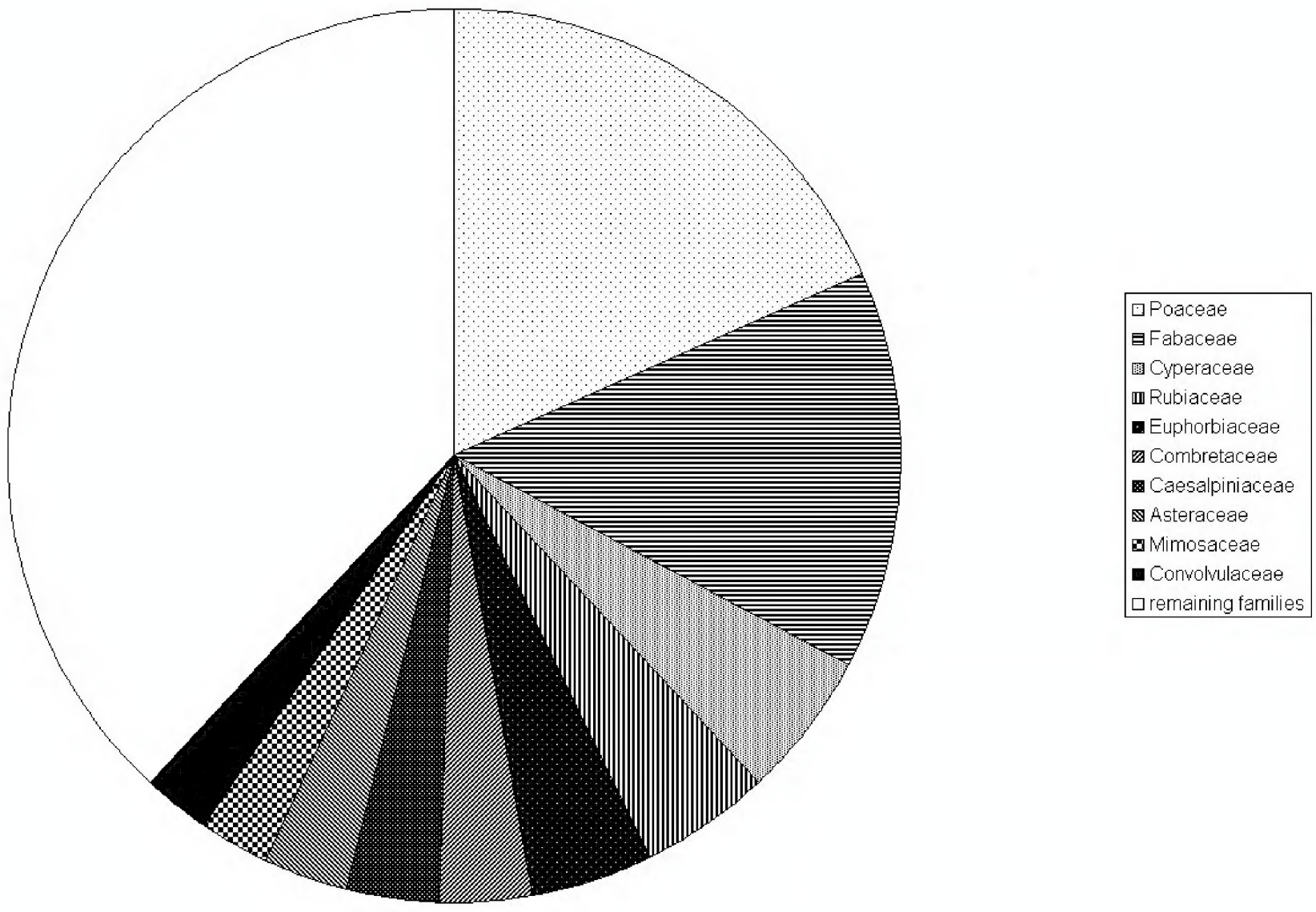


**Figure 2**. Family composition of the Magnoliophyte species in the partial faunal reserve of Pama.

The dominance of Poaceae and Fabaceae is typical for savanna areas and is – apart from species richness – also found in measures of abundance (e.g. Hahn-Hadjali et al. 2006). These two families are also the most species-rich in Burkina Faso as a whole (Schmidt 2006), and in the nearby Atakora mountains in northern Benin (Wala 2004). Further south, in Ivory Coast, Rubiaceae becomes more important (Aké Assi 2002).

Most species in the Pama reserve are therophytes (189), followed by phanerophytes (142), hemicryptophytes (46), chamaephytes (37), geophytes (34), helophytes, and hydrophytes (1 each) (Figure 3). Similar results with about one third of the species belonging to therophytes and another third to phanerophytes were found by Wala (2004) and Schmidt (2006), but in both cases, phanerophytes are slightly more species-rich. The higher share of therophytes in the present study is caused by the prevalence of savanna habitats.

As compared to the flora of the nearby W National Park (Arbonnier et al. 2002: 512 species), there are 11 % less species in the partial faunal reserve of Pama. This is probably due to the

higher habitat diversity within W National Park and the larger area of this transfrontier National Park. In the Atakora mountains, Wala (2004) found 663 species, but that area has not only a high topo-diversity, but also belongs to the more species-rich southern domain of the Sudanian zone.

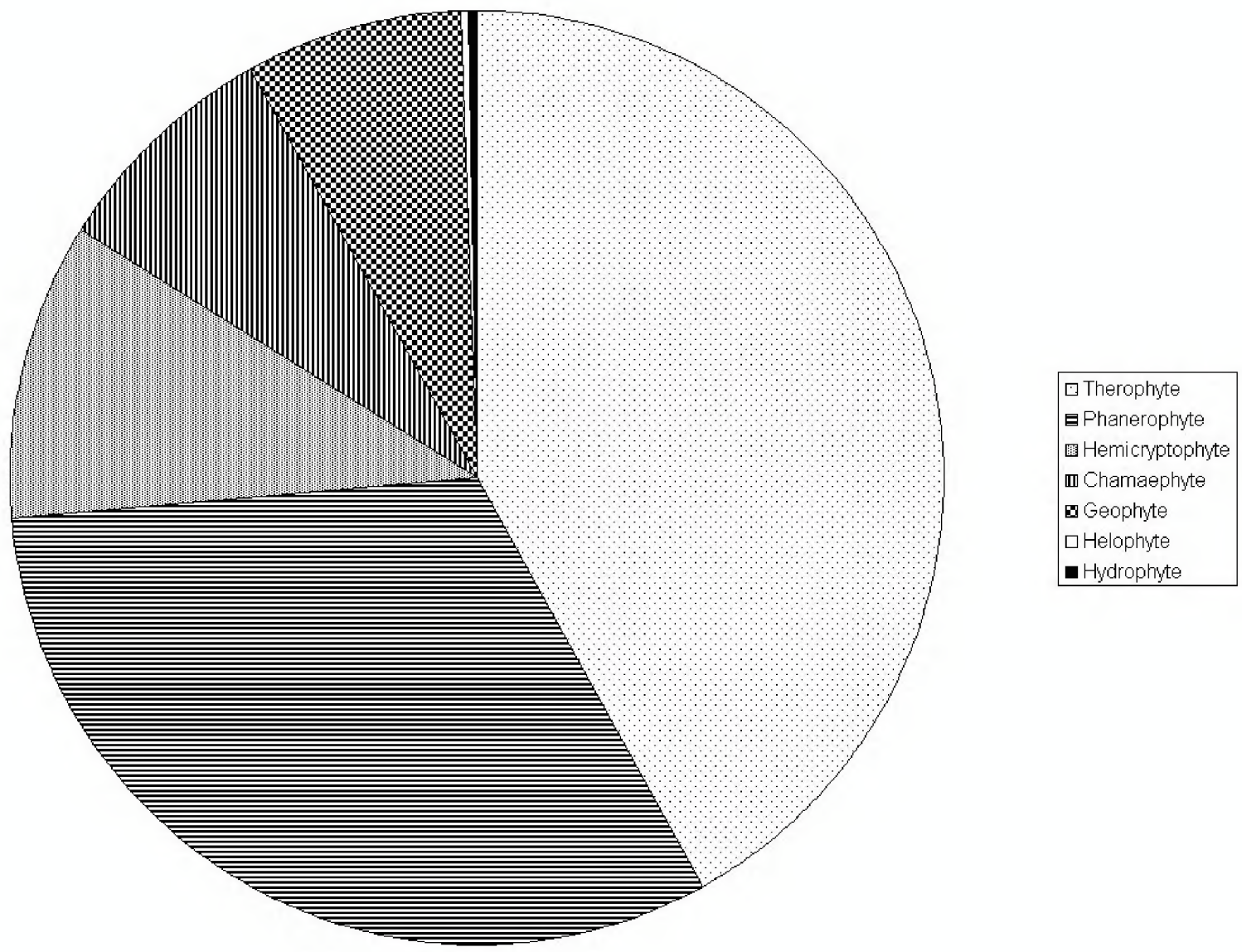


**Figure 3**. Life form composition of the Magnoliophyte species in the partial faunal reserve of Pama.

**List of species**

Magnoliophyta of the partial faunal reserve of Pama, ordered by family and species. Life form information is provided in brackets after the species (T, therophyte; G, geophyte; C, chamaephyte; P, phanerophyte; Helo, helophyte; and Hydro, hydrophyte)

**Acanthaceae**

*Blepharis linariifolia* Pers. [T] Mbayngone 161, Thiombiano et al. 432
*Blepharis maderaspatensis* (L.) B.Heyne ex Roth [T] Mbayngone 245, Thiombiano 780
*Dyschoriste perrottetii* (Nees) Kuntze [T] Mbayngone 460
*Hygrophila senegalensis* (Nees) T.Anderson [T] Mbayngone 399, Schmidt 740, Thiombiano et al. 216
*Justicia ladanoides* Lam. [C] Mbayngone 394 & 398
*Lepidagathis anobrya* Nees [C] Mbayngone 117, 137 & 273, Thiombiano 486 & 999
*Monechma ciliatum* (Jacq.) Milne-Redh. [T] Mbayngone 127
*Monechma depauperatum* (T.Anderson) C.B.Clarke [C] Thiombiano 718
*Nelsonia canescens* (Lam.) Spreng. [C] Thiombiano 1059, Thiombiano et al. 209 & 226

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**Alismataceae**
*Sagittaria guayanensis* Humb. & Bonpl. & Kunth [Hydro] Schmidt 742

**Amaranthaceae**
*Achyranthes aspera* L. [T]
*Pandiaka angustifolia* (Vahl) Hepper [T]
*Pandiaka involucrata* (Moq.) B.D.Jacks. [T] Mbayngone 238

**Anacardiaceae**
*Haematostaphis barteri* Hook.f. [P]
*Lannea acida* A.Rich. [P]
*Lannea microcarpa* Engl. & K.Krause [P]
*Ozoroa obovata* (Oliv.) R.Fern. & A.Fern. [P] Mbayngone 91
*Sclerocarya birrea* (A.Rich.) Hochst. [P]

**Annonaceae**
*Annona senegalensis* Pers. [P]
*Hexalobus monopetalus* (A.Rich.) Engl. & Diels [P] Mbayngone 95
*Xylopia acutiflora* (Dunal) A.Rich. [P] Mbayngone 465

**Anthericaceae**
*Chlorophytum blepharophyllum* Schweinf. ex Baker [H] Ouédraogo 36
*Chlorophytum pusillum* Schweinf. ex Baker [G] Mbayngone 163 & 345
*Chlorophytum stenopetalum* Baker [H] Mbayngone 183

**Apocynaceae**
*Asclepias curassavica* L. [C] Mbayngone 329
*Brachystelma exile* Bullock [G]
*Holarrhena floribunda* (G.Don) T.Durand & Schinz [P] Thiombiano 800

**Araceae**
*Amorphophallus aphyllus* (Hook.) Hutch. [G]
*Stylochaeton hypogaeus* Lepr. [G]
*Stylochaeton lancifolius* Kotschy & Peyr. [G]

**Arecaceae**
*Borassus aethiopum* Mart. [P]

**Asclepiadaceae**
*Calotropis procera* (Aiton) R.Br. [P] Thiombiano 1066
*Ceropegia deightonii* Hutch. & Dalziel [G] Mbayngone 177
*Leptadenia hastata* (Pers.) Decne. [P] Thiombiano 1062
*Raphionacme bingeri* (A.Chev.) Lebrun & Stork [G]
*Raphionacme brownii* Scott-Elliot [G] Mbayngone 236
*Tacazzea apiculata* Oliv. [P] Mbayngone 469
*Xysmalobium heudelotianum* Decne. [C] Mbayngone 126 & 196

**Asparagaceae**
*Asparagus africanus* Lam. [G]

**Asteraceae**
*Aspilia bussei* O.Hoffm. & Muschl. [T]
*Aspilia helianthoides* (Schumach. & Thonn.) Oliv. & Hiern [T] Mbayngone 118
*Aspilia paludosa* Berhaut [T] Mbayngone 370, Thiombiano 502
*Aspilia rudis* Oliv. & Hiern [T] Mbayngone 237 & 261
*Bidens barteri* (Oliv. & Hiern) T.G.J.Rayner [T]
*Bidens pilosa* L. [T] Hahn-Hadjali 1032

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**Asteraceae** (continued)
*Centaurea praecox* Oliv. & Hiern [H] Mbayngone 440
*Chrysanthellum indicum* DC. [T]
*Dicoma sessiliflora* Harv. [H] Mbayngone 175, 176 & 321
*Lactuca praevia* C.D.Adams [G] Mbayngone 322
*Melanthera elliptica* O.Hoffm. [H] Mbayngone 180
*Melanthera scandens* (Schumach. & Thonn.) Roberty [T] Mbayngone 338
*Pentanema indicum* (L.) Y.Ling [T] Mbayngone 262
*Vernonia colorata* (Willd.) Drake [P] Thiombiano et al. 229

**Balanitaceae**
*Balanites aegyptiaca* (L.) Delile [P]

**Bignoniaceae**
*Stereospermum kunthianum* Cham. [P] Thiombiano 834, Thiombiano et al. 2122

**Bombacaceae**
*Adansonia digitata* L. [P]
*Bombax costatum* Pellegr. & Vuill. [P] Thiombiano 775

**Boraginaceae**
*Heliotropium bacciferum* Forssk. [T] Thiombiano 351 & 423
*Heliotropium strigosum* Willd. [T] Mbayngone 250 & 331

**Burseraceae**
*Commiphora africana* (A.Rich.) Engl. [P]

**Caesalpiniaceae**
*Afzelia africana* Sm. ex Pers. [P] Thiombiano 801
*Burkea africana* Hook. [P] Mbayngone 335
*Cassia absus* L. [C] Mbayngone 391
*Cassia italica* (Mill.) Lam. ex F.W.Andrews [C] Thiombiano 585
*Cassia mimosoides* L. [T] Thiombiano 815
*Cassia nigricans* Vahl [T]
*Cassia obtusifolia* L. [P]
*Cassia occidentalis* L. [T] Thiombiano 1060
*Cassia sieberiana* DC. [P]
*Daniellia oliveri* (Rolfe) Hutch. & Dalziel [P] Thiombiano 294 & 802
*Detarium microcarpum* Guill. & Perr. [P] Mbayngone 316, Thiombiano 808
*Piliostigma reticulatum* (DC.) Hochst. [P]
*Piliostigma thonningii* (Schumach.) Milne-Redh. [P] Mbayngone 348
*Tamarindus indica* L. [P]

**Capparaceae**
*Boscia senegalensis* (Pers.) Lam. [P]
*Cadaba farinosa* Forssk. [P]
*Capparis sepiaria* L. [P]
*Maerua angolensis* DC. [P]
*Maerua oblongifolia* (Forssk.) A.Rich. [P]

**Caryophyllaceae**
*Polycarpaea eriantha* Hochst. ex A.Rich. [T] Mbayngone 170 & 284
*Polycarpaea linearifolia* (DC.) DC. [T] Mbayngone 168 & 346, Thiombiano 348, 425 & 781, Thiombiano et al. 2324

**Celastraceae**
*Gymnosporia senegalensis* (Lam.) Loes. [P]

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### Chrysobalanaceae
*Parinari curatellifolia* Planch. ex Benth. [P] Mbayngone 92

### Cochlospermaceae
*Cochlospermum planchonii* Hook.f. [C]
*Cochlospermum tinctorium* Perr. ex A.Rich. [G] Mbayngone 274

### Colchicaceae
*Gloriosa superba* L. [G]
*Iphigenia ledermannii* Engl. & K.Krause [G] Mbayngone 157 & 256, Thiombiano 433

### Combretaceae
*Anogeissus leiocarpa* (DC.) Guill. & Perr. [P]
*Combretum adenogonium* Steud. ex A.Rich. [P] Mbayngone 349
*Combretum collinum* Fresen. [P] Mbayngone 350, Thiombiano 150, 496, 811, 876, 877 & 885
*Combretum glutinosum* Perr. ex DC. [P] Thiombiano 1058
*Combretum micranthum* G.Don [P]
*Combretum molle* R.Br. ex G.Don [P]
*Combretum nigricans* Lepr. ex Guill. & Perr. [P] Thiombiano et al. 2326
*Combretum paniculatum* Vent. [P]
*Guiera senegalensis* J.F.Gmel. [P]
*Pteleopsis suberosa* Engl. & Diels [P] Thiombiano 151 & 152, Thiombiano et al. 2530
*Terminalia avicennioides* Guill. & Perr. [P] Thiombiano 497, Thiombiano et al. 2111
*Terminalia laxiflora* Engl. & Diels [P]
*Terminalia macroptera* Guill. & Perr. [P]
*Terminalia mollis* M.A.Lawson [P]
*Terminalia schimperiana* Hochst. [P]

### Commelinaceae
*Aneilema lanceolatum* Benth. [C] Mbayngone 275, 282 & 412, Thiombiano 347
*Aneilema paludosum* A.Chev. [Helo] Mbayngone 415 & 423, Thiombiano et al. 247
*Commelina benghalensis* L. [C] Mbayngone 367
*Commelina erecta* L. [T] Mbayngone 148
*Commelina nigritana* Benth. [C] Mbayngone 378
*Commelina subulata* Roth [T]
*Cyanotis lanata* Benth. [T] Mbayngone 191, Thiombiano 357

### Connaraceae
*Rourea coccinea* (Thonn. ex Schumach.) Benth. [P]

### Convolvulaceae
*Evolvulus alsinoides* (L.) L. [C] Thiombiano 350
*Ipomoea argentaurata* Hallier f. [T] Mbayngone 319 & 485
*Ipomoea asarifolia* (Desr.) Roem. & Schult. [P]
*Ipomoea coscinosperma* Hochst. ex Choisy [T] Mbayngone 139 & 162, Thiombiano 349, 475, 485 & 500
*Ipomoea eriocarpa* R.Br. [T] Mbayngone 147
*Ipomoea heterotricha* Didr. [T]
*Ipomoea obscura* (L.) Ker Gawl. [T]
*Ipomoea setifera* Poir. [T] Mbayngone 244
*Ipomoea triloba* L. [T] Mbayngone 234
*Merremia dissecta* (Jacq.) Hallier f. [T] Mbayngone 309
*Merremia kentrocaulos* (C.B.Clarke) Hallier f. [P] Mbayngone 435

### Cucurbitaceae
*Citrullus lanatus* (Thunb.) Matsum. & Nakai [T]
*Cucumis melo* L. [T] Mbayngone 434
*Mukia maderaspatana* (L.) M.Roem. [H] Mbayngone 131

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### Cyperaceae
*Abildgaardia abortiva* (Steud.) Lye [T]
*Abildgaardia coleotricha* (Hochst. ex A.Rich.) Lye [T] Mbayngone 1, 28, 126 & 518
*Abildgaardia filamentosa* (Vahl) Lye [H]
*Abildgaardia hispidula* (Vahl) Lye [T] Mbayngone 2 & 74
*Abildgaardia pilosa* (Willd.) Nees [T] Mbayngone 279
*Abildgaardia wallichiana* (Schult.) Lye [T] Mbayngone 20 & 83
*Ascolepis protea* Welw. [H] Mbayngone 9 & 49
*Cyperus haspan* L. [H] Mbayngone 19, Thiombiano et al. 256
*Cyperus podocarpus* Boeckeler [T] Mbayngone 03, 31 & 32, Thiombiano et al. 494
*Cyperus reduncus* Hochst. ex Boeckeler [T] Mbayngone 340
*Cyperus rotundus* L. [G] Mbayngone 05, 51 & 81
*Eleocharis brainii* Svenson [T] Mbayngone 456
*Fimbristylis dichotoma* (L.) Vahl [H] Mbayngone 35
*Fimbristylis ferruginea* (L.) Vahl [H] Mbayngone 355, Thiombiano 492
*Fimbristylis microcarya* F.Muell. [H]
*Kyllinga erecta* Schumach. [G]
*Kyllinga pumila* Michx. [H]
*Kyllinga squamulata* Thonn. ex Vahl [T] Mbayngone 15 & 23
*Mariscus cylindristachyus* Steud. [H] Mbayngone 442
*Mariscus squarrosus* (L.) C.B.Clarke [T] Mbayngone 13,
*Pycreus flavescens* (L.) P.Beauv. ex Rchb. [T] Mbayngone 424
*Pycreus macrostachyos* (Lam.) J.Raynal [T] Thiombiano et al. 205
*Scleria pergracilis* (Nees) Kunth [T] Mbayngone 142, 208 & 263
*Scleria sphaerocarpa* (E.A.Rob.) Napper [T]

### Dioscoreaceae
*Dioscorea alata* L. [G] Mbayngone 241
*Dioscorea bulbifera* L. [G] Thiombiano 476
*Dioscorea cayenensis* Lam. [G]
*Dioscorea sagittifolia* Pax [G]
*Dioscorea togoensis* R.Knuth [G] Mbayngone 432

### Droseraceae
*Drosera indica* L. [T] Mbayngone 402 & 414

### Ebenaceae
*Diospyros mespiliformis* Hochst. ex A.DC. [P] Hahn-Hadjali 1061

### Euphorbiaceae
*Acalypha crenata* Hochst. ex A.Rich. [T] Mbayngone 387
*Antidesma rufescens* Tul. [P] Mbayngone 466
*Antidesma venosum* E.Mey. ex Tul. [P] Thiombiano 603
*Bridelia ferruginea* Benth. [P] Mbayngone 307 & 341
*Bridelia scleroneura* Müll.Arg. [P] Thiombiano 806
*Caperonia serrata* (Turcz.) C.Presl [T] Mbayngone 407 & 454
*Croton nigritanus* Scott-Elliot [P] Mbayngone 467
*Croton scarciesii* Scott-Elliot [P] Mbayngone 468
*Euphorbia convolvuloides* Hochst. ex Benth. [T] Mbayngone 287, Thiombiano 442
*Euphorbia hirta* L. [T]
*Euphorbia hyssopifolia* L. [T] Thiombiano 431
*Euphorbia polycnemoides* Hochst. ex Boiss. [T] Mbayngone 165, Thiombiano et al. 2000
*Excoecaria grahamii* Stapf [C] Mbayngone 215 & 306
*Flueggea virosa* (Roxb. ex Willd.) Voigt [P]
*Hymenocardia acida* Tul. [P] Ouédraogo 46
*Mallotus oppositifolius* (Geiseler) Müll.Arg. [P] Mbayngone 461

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**Euphorbiaceae** (continued)
*Phyllanthus amarus* Schumach. & Thonn. [P]
*Phyllanthus welwitschianus* Müll.Arg. [P] Thiombiano 443
*Tragia senegalensis* Müll.Arg. [P] Hahn-Hadjali 365, Mbayngone 247
*Tragia tenuifolia* Benth. [P] Hahn-Hadjali 365, Thiombiano 973, Thiombiano et al. 478 & 498

**Fabaceae**
*Adenodolichos paniculatus* (Hua) Hutch. & Dalziel [P] Mbayngone 330, Thiombiano et al. 774
*Aeschynomene indica* L. [P] Thiombiano et al. 232
*Alysicarpus glumaceus* (Vahl) DC. [T] Thiombiano et al. 2127
*Alysicarpus ovalifolius* (Schumach.) J.Léonard [T] Thiombiano et al. 198
*Alysicarpus rugosus* (Willd.) DC. [T] Mbayngone 121 & 416, Thiombiano et al. 207
*Bobgunnia madagascariensis* (Desv.) J.H.Kirkbr. & Wiersema [P]
*Cajanus kerstingii* Harms [P] Thiombiano 481
*Crotalaria arenaria* Benth. [T]
*Crotalaria barkae* Schweinf. [T] Mbayngone 428
*Crotalaria bongensis* Baker f. [T] Schmidt 748
*Crotalaria goreensis* Guill. & Perr. [P] Thiombiano et al. 203
*Crotalaria leprieurii* Guill. & Perr. [T] Mbayngone 207, 265 & 277
*Crotalaria macrocalyx* Benth. [T] Mbayngone 366, Thiombiano 427
*Crotalaria microcarpa* Hochst. ex Benth. [T] Mbayngone 112 & 166, Thiombiano 426
*Crotalaria naragutensis* Hutch. [T]
*Desmodium gangeticum* (L.) DC. [C] Hahn-Hadjali 478, Mbayngone 179, 264 & 313, Thiombiano 478
*Desmodium ospriostreblum* Chiov. [T] Mbayngone 257
*Desmodium velutinum* (Willd.) DC. [C] Thiombiano 472 & 499, Thiombiano et al. 220
*Eriosema andohii* Milne-Redh. [C] Mbayngone 458
*Eriosema griseum* Baker [C] Thiombiano 429
*Eriosema psoraleoides* (Lam.) G.Don [C] Mbayngone 229
*Indigofera aspera* Perr. ex DC. [T] Mbayngone 384
*Indigofera berhautiana* J.B.Gillett [C]
*Indigofera bracteolata* DC. [C] Mbayngone 354, Thiombiano et al. 190
*Indigofera colutea* (Burm.f.) Merr. [T] Mbayngone 375
*Indigofera congolensis* De Wild. & T.Durand [T] Schmidt 806
*Indigofera dendroides* Jacq. [T] Thiombiano 1008
*Indigofera geminata* Baker [T] Mbayngone 105 & 253, Thiombiano 354
*Indigofera hochstetteri* Baker [T] Mbayngone 471
*Indigofera leprieurii* Baker f. [T] Mbayngone 128
*Indigofera leptoclada* Harms [T] Thiombiano 369 & 787
*Indigofera macrocalyx* Guill. & Perr. [T] Mbayngone 289
*Indigofera microcarpa* Desv. [T] Mbayngone 186
*Indigofera nigritana* Hook.f. [T] Mbayngone 217 & 302, Thiombiano et al. 217
*Indigofera paniculata* Vahl ex Pers. [T] Mbayngone 108, Thiombiano 404 & 436
*Indigofera pilosa* Poir. [T]
*Indigofera stenophylla* Guill. & Perr. [T] Thiombiano 353
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## Acknowledgements
We are grateful for the support of the VW Foundation (for E. Mbayngone), and the German Ministry of Education and Research (BMBF) in funding the BIOTA project (funding code: 01LC0617D1). We would also like to thank Julio A. Lombardi and an anonymous referee for their comments.

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Received December 2007
Accepted July 2008
Published online August 2008